



John F. Kennedy Space Center's Inherently Conductive Polymer



BENEFITS

- Increased solubility and processability
- Water solubility and highly cross-linkable
- Prepared from inexpensive materials

The National Aeronautics and Space Administration (NASA) seeks to license inherently conductive compositions (ICP) of matter and methods for the preparation of conductive compositions of matter with increased conductivity (U.S. Patent Nos.: 5,968,417; 6,059,999; 6,299,800; 6,676,617; and 6,972,098). Electrically conducting polymers are of great interest because of potential applications where they may replace metals and semimetals that require comparatively more energy in processing. ICPs have electrical conductivity properties similar to inorganic semiconductors and as a result, are able to discharge static before charges reach unsafe levels. A need existed for novel electrically conducting polymers with increased solubility, increased processability, and that can be prepared from inexpensive materials. The NASA patented technologies provide an inexpensive and environmentally safe product and methods to increase processability, and solubility of electrically conducting polymers.

APPLICATIONS

- Anti-static coatings, fabrics, and packaging
- EMI/RFI shielding
- Electro chromic "smart" windows
- Rechargeable Batteries
- OLEDs (organic light emitting displays)
- RFID
- Corrosion-resistant Coatings
 - Bridges and highway maintenance
 - Oil & Gas Facilities and Pipelines
 - Marine
 - Railroad
 - Chemical processing
 - Waste and water treatment
 - Pulp and paper
 - Mining
 - Critical service OEM
 - Commercial architectural

TECHNOLOGY STATUS

- ☐ Patent pending
- ☒ U.S. Patent No. 6,764,617
- ☐ Copyrighted
- ☒ Available to license
- ☐ Available for no-cost transfer
- ☐ Seeking industry partner for further codevelopment

Technology Details

NASA developed ICPs that are comprised of sulfonated lignin or lignosulfonate. Lignin is a principal constituent of the wood structure of higher plants, and ranks second to cellulose as the most abundant organic material. The sulfite process of the paper and wood-pulp industries yields a spent liquor that comprises sulfonated lignins (i.e. lignosulfonates) and are inexpensive polyaryl-sulfonic acids that are highly soluble in water.

Additionally, the NASA ICPs can be utilized as a Corrosion-Resistant Polyaniline Primer. The primer provides corrosion resistance superior to current coatings on the market, and it can reduce the cost of replacing and repairing corroded materials. This primer can be applied to metals exposed to corrosive environments. It adheres to a wide range of bases and top-coats and protects against corrosion even when bare metal is exposed.

Partnership Opportunities

NASA has been issued a U.S. patent on the Inherently Conductive Polymer and is seeking licensees of the patent. All NASA licenses are individually negotiated with the prospective licensee, and each license contains terms concerning commercialization (practical application), license duration, royalties, and periodic reporting. NASA patent licenses may be exclusive, partially exclusive, or nonexclusive. If your company is interested in the new conductive compositions of matter technology, or if you desire additional information, please reference Case Number KSC-12190 and contact:

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